CHAPTER EIGHTEEN

Strategic Forces and Deterrence: *New Realities, New Roles?*

Where are strategic forces and nuclear deterrence headed? The nuclear tensions that existed in the Cold War have dramatically lessened. However, an overwhelming and growing percentage of the world's population are citizens of states that are either de facto nuclear powers or allied with such powers. Moreover, Indian and Pakistani nuclear tests in spring 1998 reminded many that we still live in a nuclear world. Growing concerns over the North Korean and Iranian nuclear weapons programs are a further reminder. This chapter's theme is that strategic forces and deterrence face changing roles in U.S. national security policy.

Key Trends

Declining Strategic Nuclear Threat

The East-West strategic nuclear rivalry that dominated the global security environment for more than 40 years has been fundamentally and, in many ways, irreversibly altered. The bilateral "nuclear balance" that previously occupied center stage no longer dominates U.S. and Russian strategic calculations. The United States is no longer concerned with large-scale conflict in Europe that could escalate into nuclear exchanges.

These positive changes are apparent in U.S. and Russian nuclear postures. On the U.S. side, 90 percent of theater nuclear forces have been eliminated; these include atomic demolition munitions and artillery-fired atomic projectiles intended to offset Soviet conventional superiority. At the strategic level, the United States and Russia each have reduced deployed strategic warheads accountable under START I from about 12,000 to 6,000. If START II is implemented, each side will reduce these levels to 3,000 to 3,500. The levels under discussion for START III would bring this down to about 2,000 to 2,500 accountable warheads. U.S. megatonnage has declined more than 90 percent, exceeding the decline in the number of delivery vehicles.

Remaining Strategic Uncertainties

Positive changes have occurred in U.S. relationships with Russia and China. However, strategic uncertainties remain and nuclear weapons are a major factor. Nuclear weapons

appear to play a growing role in Russian declaratory policy and defense planning. Russia has retained between 10,000 and 15,000 (and perhaps more) theater nuclear weapons. It recently deployed the new SS–27 intercontinental ballistic missile (ICBM). It continues to invest in its overall nuclear infrastructure; this includes hardened command and control facilities and the extensive nuclear weapons production complex. The strategic uncertainties with China are perhaps even greater. As an emerging global power, China highly values its own modest but increasingly capable nuclear forces. It tested a new generation of nuclear weapons before signing the Comprehensive Test Ban Treaty.

Proliferation Threat: Growing and Varied

Growing proliferation of nuclear, chemical, and biological weapons is posing new dangers for U.S. deterrence strategy. It has increased the variety of threats that might be employed against the United States, its forces, and its friends. More than two dozen states are believed to possess weapons of mass destruction (WMD) or have the capability to develop them. Despite the important contributions of international nonproliferation regimes and norms, a determined proliferator will likely succeed.

Such states as North Korea and Iran either have or are aggressively pursuing nuclear, chemical, and biological weapons. Their motives for acquiring these weapons are numerous and overlapping. They range from status seeking, to regime survival, to tools of aggression against neighbors. A key incentive is to deter the intervention of U.S. conventional forces in regions where these states seek to forcefully achieve their goals.

Weapons of mass destruction and their delivery systems are spreading at an alarming rate in regions of key interest to the United States, such as Northeast and Southwest Asia. These capabilities can hold U.S. and coalition forces at risk and pose serious military and political threats.

The threat of WMD is not restricted to military use. A new and equally disturbing proliferation trend is the emergence of terrorist groups seeking WMD. The Japanese cult Aum Shinrikyo conducted a terrorist attack with sarin nerve agent in March 1995. It was subsequently discovered that this group had tried to develop and use biological weapons.

Terrorism experts have argued that moral and political constraints inhibit terrorists from employing weapons for mass killing. In this view, terrorists are rational actors in pursuit of specific political objectives, and mass murder would be counterproductive to their aims. However, such rational constraints may not apply to all terrorist groups. Many terrorism experts now argue that some groups find mass murder consistent with their objectives. The World Trade Center bombers reportedly hoped to kill most of the 250,000 people who worked in the twin-towers complex. The Aum's original goal was to kill millions.

Many analysts believe that some countries may be tempted to use WMD against military and civilian targets on U.S. territory, using either terrorists or their own operatives. The Department of State has identified seven countries as state supporters of terrorism: Cuba, Iran, Iraq, Libya, North Korea, Sudan, and Syria. All are suspected of possessing biological weapons programs. All but Cuba possess chemical weapons programs. Four have nuclear weapons programs (see table).

Concerns that terrorists might employ such weapons against U.S. forces have made defenses against such attacks an important consideration. Many recognize that it may not be possible to deter or stop covert NBC attacks. Increasing attention is being given to consequence management, which deals with the effects of WMD use.

Overall, proliferation and nonproliferation trends are mixed. The majority of the global community supports international norms against WMD proliferation; this includes strengthening the Nuclear Nonproliferation Treaty and the Biological and Chemical Weapons Conventions. Despite this consensus, WMD proliferation clearly will remain a global security problem. The knowledge to build these weapons will continue to exist. Moreover, the value ascribed to them has been increasing. For example, the Indian and Pakistani nuclear tests demonstrated the political and public resolve of these countries, despite the risk of international censure.

Current U.S. Strategic Forces

Today, the U.S. strategic forces posture includes the following assets:

Land-Based ICBMs:

Minuteman III (three warheads)	500
Peacekeeper (ten warheads)	50

Heavy Bombers (Total Aircraft Inventory)

B–52	94
B–1	43
B–2	21

Submarine-Launched Ballistic Missiles (Operational)

Trident	432

This posture contrasts with the larger forces of the Cold War. In 1992, the U.S. strategic posture included 930 ICBMs, 213 strategic bombers, and 464 SLBMs. During the Cold War, strategic forces accounted for about 7.2 percent of DOD's budget. Today, they account for about 2.6 percent.

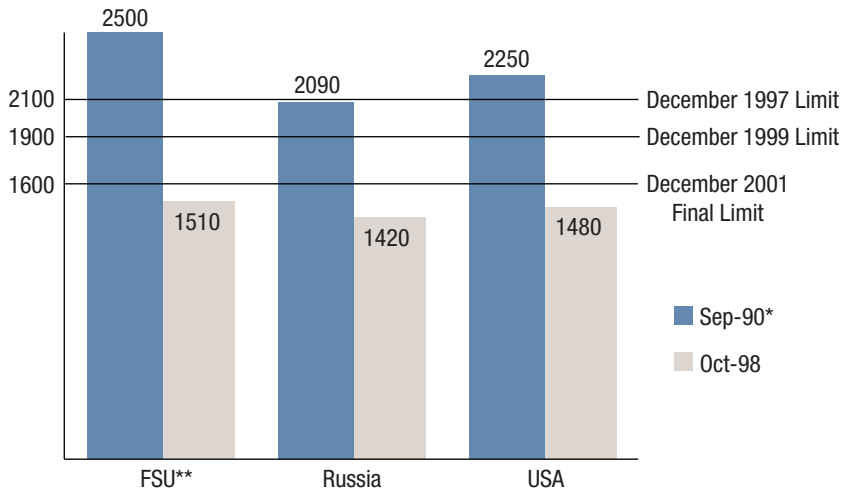
Source: STRATCOM FACT SHEETS, http://www.af.mil. See also: *Annual Report to the President and Congress,* William S. Cohen, Secretary of Defense, 1998.

State Supporters of Terrorism and NBC Programs

State Supporters of Terrorism	Nuclear Program	Chemical Program	Biological Program
Cuba	None	None	Confirmed
Iraq	Confirmed	Confirmed	Confirmed
Iran	Confirmed	Confirmed	Confirmed
Libya	Confirmed	Confirmed	Confirmed
North Korea	Confirmed	Confirmed	Confirmed
Sudan	None	Confirmed	Confirmed
Syria	None	Confirmed	Confirmed

Sources: U.S. Department of State, *1997 Patterns of Global Terrorism Report*, April 1998. Except for Cuba and Sudan, assessments are based on Arms Control and Disarmament Agency, *Adherence To and Compliance with Arms Control Agreements, 1997*, and Office of the Secretary of Defense, *Proliferation: Threat and Response*, November 1997.

Progress toward START I Limits: Missile Launchers and Heavy Bombers



* Date of initial START I data exchange.
** Belarus, Kazakhstan, Russia, and Ukraine (No deployed launchers remain in Belarus or Kazakhstan. Missile launchers and bombers in Ukraine are accountable until officially eliminated.)
Source: U.S. Department of Defense.

Missiles: Growing Numbers, Increasing Ranges

Most proliferators view ballistic missiles as the delivery system of choice. More than a dozen of these countries have operational ballistic missile programs. While most of these missiles are limited to about 600 kilometers in range, longer ranges are being aggressively pursued. For example, Iraq significantly increased the range of its Soviet-supplied Scuds. North Korea is actively exporting longer range Scuds. It also has deployed the 1,000-kilometer No Dong and has launched the Taepo Dong three-stage missile, which may approach intercontinental range. Potential buyers for Korean missiles are numerous. As global positioning technology becomes more available, cruise missiles will almost certainly become more attractive, offering a low-cost, highly effective delivery means.

Nuclear Weapons: Still Essential

In the context of the above trends, nuclear weapons continue to play an indispensable role in U.S. security policy. As noted, U.S. nuclear weapons serve as a hedge against uncertainties associated with Russia and China. They also help deter a wider and less predictable group of potential adversaries, including those with weapons of mass destruction. Additionally, nuclear weapons ensure U.S. security guarantees to friends and allies, providing greater stability in the international environment and promoting U.S. nonproliferation goals.

Despite this importance, there are increasing demands for radical reductions in nuclear weapons and, in some cases, their total elimination. Such calls ignore the critical role that nuclear weapons play in national security strategy. Moreover, if the United States were to divest itself of its nuclear arsenal, other states would be unlikely to do the same. To the contrary, some would see this as an incentive to retain or acquire nuclear weapons. Even if nuclear weapons were completely eliminated, a serious deterioration of the international environment would engender strong incentives for nuclear rearmament. An intense multilateral race to rebuild nuclear arsenals could increase prospects for a devastating war. A century ago, no one foresaw the rise of Hitler or Mussolini or the spread of communism. A similar development in the future, coupled with a race to rearm with nuclear weapons, could be catastrophic.

U.S. Interests

Maintaining a Credible Nuclear Deterrent

While advanced conventional capabilities contribute to deterrence, no substitutes exist for nuclear weapons. The United States cannot be certain that all adversaries will be deterred by U.S. conventional capabilities, especially if they perceive weapons of mass destruction as the means to overcome their conventional disadvantages by posing an asymmetric threat. Moreover, there is no guarantee that the United States will maintain its qualitative conventional edge. It could be eroded by funding deficiencies, other states gaining technological advantages, or adopting effective asymmetrical strategies.

The United States plays a unique role on the world scene. It could not meet its international security responsibilities if it reduced its nuclear stockpile to a level comparable to that of a regional nuclear power, such as China. It also cannot rely on the capabilities of any single state to meet these global responsibilities. For a variety of reasons, a country such as Russia could reduce its strategic nuclear systems to relatively low levels, but not the United States.

The United States must maintain a credible nuclear deterrent, structured to counter existing and emerging threats. Based on guidelines for post-Cold War U.S. nuclear policy issued in November 1997, nuclear weapons remain a central although less prominent element of national security. This policy reaffirms a TRIAD posture consisting of intercontinental ballistic missiles, submarine-launched ballistic missiles, and bombers. This latest guidance takes greater account of threats posed by chemical and biological weapons and the role of nuclear forces in deterring the use of such weapons against the United States and its allies. This contemporary deterrence includes the following central roles for nuclear weapons:

- Deter nuclear threats against the United States.
- Deter use of other WMD and, in some cases, deter large-scale conventional aggression. Nuclear weapons will also enable the United States to control conflict escalation in regions of importance, to include protecting U.S. military capabilities as well as its forces, allied/friendly territory, and civilian populations.
- Prevent undesired proliferation of all WMD by reassuring allies and friends and discouraging adversaries from acquiring WMD.

The credibility of the U.S. nuclear deterrent must never be in question. The U.S. nuclear posture today can be different from the past. At the same time, certain attributes of the nuclear deterrent must endure if the United States is to be perceived as meeting the security challenges it faces.

To achieve a stable deterrent, experience demonstrates that U.S. nuclear forces must meet the following fundamental requirements:

AP/Wide World Photos

Ceremony marking the removal of the last of 150 Minuteman III missiles deployed at Grand Forks Air Force Base, North Dakota

AP/Wide World Photos

Russian Defense Minister Igor Sergeyev meets officers at the control center of the 104th Missile Regiment near Tatishchevo, Russia. Sergeyev visited the base to inaugurate Russia's new missile, the Topol-M.

- They must be *safe and secure*. The extremely high standards of safety that have been achieved cannot be relaxed.
- Forces must be *responsive* to political control and *effective* against all potential targets contemplated in the strategy. Both U.S. leaders and those of states to be deterred must have confidence in the ability of the United States to strike when and where it believes necessary.
- Overall forces must be *survivable* so that no adversary perceives exploitable vulnerabilities, thus undercutting stability.

Maintaining the TRIAD

The United States will retain the three legs of the TRIAD. Elimination of any leg would weaken deterrence. These three legs provide synergy, flexibility, and survivability. Together, they strengthen deterrence. Their diverse capabilities and basing hedge against an aggressor's technological breakthrough or the discovery of vulnerabilities within any one system. The following characterizes each TRIAD leg:

Submarine-Launched Ballistic Missiles

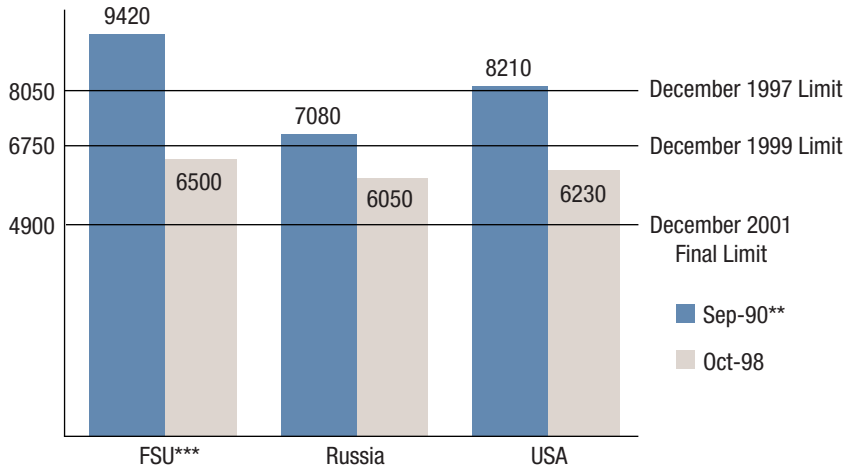
Individual Trident submarines in their patrol areas remain the most survivable forces in the TRIAD and thereby contribute significantly to stability. Yet, too many warheads in a small number of submarines would incur risk of catastrophic failure in deterrence in the event of an antisubmarine warfare breakthrough or deficiencies discovered in the Trident system. Further, submarines are vulnerable in or near their two operating bases. Over time, limiting the U.S. deterrent to a small number of platforms could invite an adversary to seek a capability for various forms of attack, including an attack that would be difficult to counter. Because the losses would not be replaceable, overall U.S. capabilities could be significantly eroded.

Intercontinental Ballistic Missiles

This leg further strengthens the TRIAD. Without ICBMs, an adversary might be tempted to conduct a limited surprise attack against the small number of U.S. bomber bases and submarine support facilities. Such an attack could devastate the U.S. ability to respond. Additionally, any decision to retaliate might be difficult, given the ambiguity of the attack and the adversary's remaining forces.

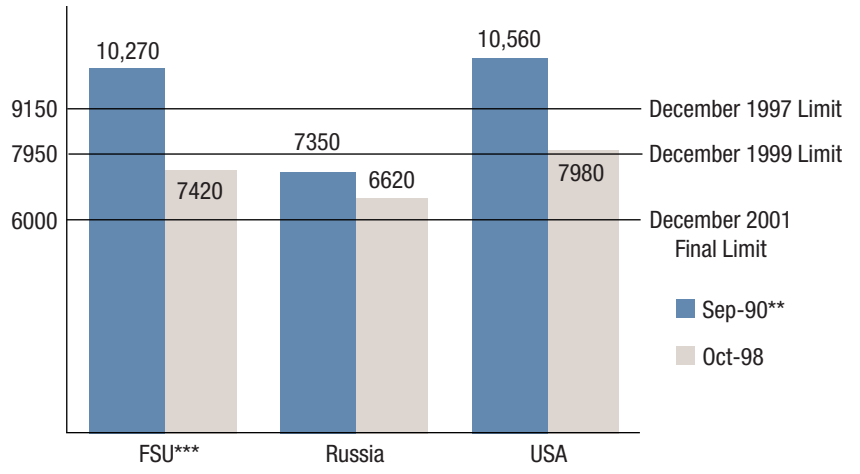
Also, any attack on U.S. ICBMs would have to be large and unambiguous, and a potential attacker would have to assume substantial retaliation. Additionally, a high-confidence attack on the U.S. ICBM force would require an adversary country to commit a large portion of its forces. At least two warheads would probably be needed to attack each silo. If such an attack were successful, the United States would retain SLBMs and

Progress toward START I Limits: Ballistic Missile Warheads*



* Warheads count against START limits until their associated delivery system is eliminated.
** Date of initial START I data exchange.
*** Belarus, Kazakhstan, Russia, and Ukraine (No deployed launchers remain in Belarus or Kazakhstan. Missile launchers and bombers in Ukraine are accountable until officially eliminated.)
Source: U.S. Department of Defense.

Progress toward START I Limits: Total Accountable Warheads*



* Date of initial START I data exchange.
** Belarus, Kazakhstan, Russia, and Ukraine (No deployed launchers remain in Belarus or Kazakhstan. Missile launchers and bombers in Ukraine are accountable until officially eliminated.)
Source: U.S. Department of Defense.

bomber forces, which no adversary would likely find acceptable.

The elimination of ICBMs with multiple warheads will change the perception of ICBMs. These weapons were once considered destabilizing because a small number of multiple warhead ICBMs can threaten a larger number of missiles in silos. As Russian nuclear forces are reduced, the U.S. single-warhead, silo-based ICBMs are of increasing value in deterring large-scale attack. Any attack on them would be unambiguous and require more warheads than would be destroyed.

Bombers

The United States will continue to require bombers for conventional capabilities. The issue is whether these bombers should also be nuclear-capable. Strong reasons exist for retaining the bomber leg of the TRIAD. Given its continuing conventional mission, the low incremental cost of maintaining its nuclear capability will be a bargain. Further, bombers can return to full alert in a brief period. Doing so could be a powerful signal of U.S. resolve, which does not pose a first strike threat. Finally without bombers, the United States would be left with a single penetration mode—ballistic missiles—thus simplifying an adversary's problem of defending against a retaliatory strike. The United States would not have a hedge against the emergence of effective ballistic missile defenses in China or Russia.

Retaining Theater Nuclear Forces

Strategic forces can strike targets anywhere on the globe. However, there may be circumstances when the best deterrent will be a visible and more proximate deterrent force. In a crisis, the ability to deploy theater nuclear forces to any region, and use them if necessary, could be the most credible deterrent. In some circumstances, the deployment of nuclear forces could send a powerful message of solidarity to allies and friends in a way that U.S.-based forces could not.

The United States also requires theater nuclear forces that can visibly couple U.S. capabilities to the security of friends and allies. The United States will retain the nuclear capability currently deployed in NATO Europe. The United States will also maintain the capability to rapidly deploy nuclear forces with a range of capabilities to deter regional states that possess weapons of mass destruction. This policy rationale supports the retention of dual-capable tactical aircraft and nuclear-armed sea-launched cruise missiles. Over the long term, it also means ensuring that currently projected aircraft, such as the Joint Strike Fighter, are dual-capable, and that the option to use a naval nuclear land-attack cruise missile is available.

Maintaining a Robust Deterrent Infrastructure

The U.S. nuclear deterrent infrastructure must be capable of maintaining current forces, as well as adapting to provide new capabilities. This infrastructure encompasses the science and technology base; industrial base; weapon systems; command, control, and communication systems; and personnel needed for operations, management, oversight, and acquisition.

This infrastructure plays an important role in deterrence. A healthy infrastructure makes clear to adversaries that the United States can rapidly respond to any emerging threat with new forces or capabilities, if necessary. To do this, the infrastructure must be sufficiently flexible and robust to respond to major departures in the security environment.

The most immediate challenge for the nuclear weapons infrastructure is that it must be able to maintain the operational status of current forces through their expected lifetime. To be cost-effective, this infrastructure will require refurbishment, using as many commercial and non-nuclear weapon technologies as possible. However, technologies unique to nuclear weapon systems will have to be sustained, as well.

The character and disposition of today's U.S. nuclear forces are the result of post-Cold War reductions. The United States plans to maintain the current generation of missiles and aircraft and their associated warheads well into the next century. No replacement programs are underway for any of today's nuclear forces. The U.S. nuclear deterrent posture will continue to be made up of the Minuteman III ICBMs, SLBMs deployed aboard TRIDENT submarines, B–52 and B–2 long-range bombers, dual-capable tactical aircraft, and air and sea-launched cruise missiles.

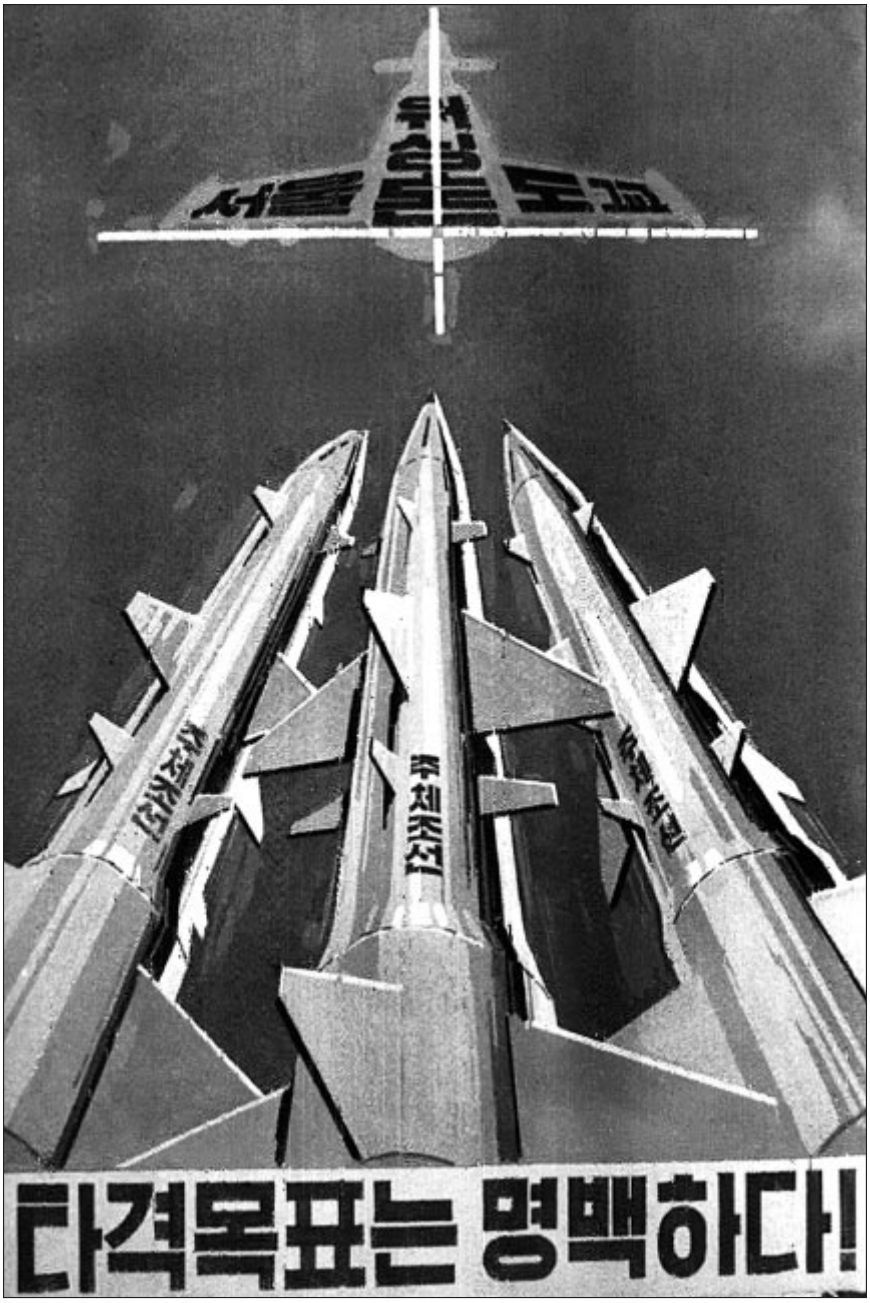
Several programs are under way to sustain the effectiveness of current forces. The propellant and guidance systems in Minuteman III missiles will be replaced during the next decade. Minuteman III silos and launch control centers will be refurbished to keep the system operational through 2020. The B–52 strategic bomber will be operational through 2040 with planned modernization and sustaining engineering programs. The Navy has extended the lifetime of the TRIDENT ballistic missile submarines to 2030. TRIDENT II missiles will be retained for 30 years, and individual missiles will reach the end of their service life beginning around 2015.

The nuclear weapons infrastructure must be able to provide replacements for the current delivery systems when they can no longer perform their missions. Additionally, the infrastructure must be prepared to respond sooner if political and technical changes diminish the effectiveness of the U.S. nuclear deterrent. Prolonging replacement will raise serious questions about industrial competence and professional expertise to perform modernization when it is required. A nuclear weapon system might need to be replaced before the end of its service life because its contribution to deterrence has been degraded. For example, the United States could lose confidence in the penetration capabilities of aircraft or cruise missiles because of more capable air defenses. Changes in target hardness or collateral damage concerns in some situations could lead to the requirement for such capabilities as new reentry vehicles. Some systems might become less survivable.

When new nuclear weapon systems are needed, the infrastructure must be able to provide design, development, testing, and production. When the Minuteman III reaches the end of its life in 2020, more than 40 years will have passed since the last ICBM, the Peacekeeper, was designed. The replacement for the TRIDENT D5 missile will be needed 25 to 30 years after it was designed. When the TRIDENT submarine fleet reaches the end of its life, it will have been more than 50 years since developers designed a ballistic missile launching submarine.

Without specific and sustained attention, there is no assurance that the United States will possess the requisite technological and industrial infrastructure to replace these capabilities. On the other hand, air-breathing systems will also need replacement long after they were first deployed. The existence of the production infrastructure for commercial as well as tactical aircraft should be able to provide successor delivery systems. However, even these systems have requirements unique to nuclear missions. These include the ability to operate in nuclear environments and command and control features that ensure that nuclear weapons will be used only when authorized.

In conclusion, when new systems are needed, whether because of aging or new security requirements, the entire infrastructure—industrial base and personnel, military and civilian—will be involved. The U.S. strategy for



AP/Wide World Photos

A North Korean poster showing missiles locked on to a plane bearing the markings, "Washington, Seoul, Tokyo" with a subtitle of "The targets are clear"

sustaining its nuclear deterrent forces will require maintenance of critical expertise, including system and subsystem engineering and integration. It will also require reducing dependence on "deterrence unique" technologies and processes. For instance, the potential exists for increased commonality among SLBM, ICBM, and space-launch systems.

In the future, priority must be given to reducing production costs, while balancing costs and performance, and preserving safety and reliability. This effort must include increased reliance on commercial and nonnuclear weapon system technologies. To achieve this objective, the Department of Defense needs a comprehensive plan dedicated to sustained management of the nuclear infrastructure.

Promoting Ballistic Missile Defense

During the Cold War, the United States chose not to pursue deployment of ballistic missile defenses owing to its arms control goals. The need for arms control remains, but the increasing missile threat will require the United States to pursue active defenses. This will be especially needed for defense against rogue states armed with long-range missiles. States such as North Korea and Iran are acquiring these systems for delivery of weapons of mass destruction. The United States should not allow a mutual vulnerability relationship to emerge with other states, either intentionally or otherwise.

To resist blackmail as well as ensure the viability of alliances, America must have high confidence in its ability to defeat at least several dozen reentry vehicles aimed at cities. The ability of the United States to effectively defend against smaller-scale attacks will also provide protection for forces and populations. Over the next 10 to 20 years, advanced missile defenses are likely to play an increasing role in U.S. deterrence. The coming period will witness key decisions on how this requirement is to be met.

Promoting Strategic Cooperation

Increased engagement with other nuclear weapon states is required to foster cooperative relationships and strengthen the stability of nuclear postures. America and Russia must continue moving beyond the corrosive Cold War posture of mutual vulnerability and enhance mutual confidence.

Since the Cold War's end, the United States and Russia have made significant progress in addressing problems in nuclear safety and security. The two countries are working, with some success, to improve the overall security of former Soviet nuclear facilities, promote fissile material control, and support dismantlement of some Russian nuclear forces.

Other areas of concern could benefit from expanded cooperation. One possibility is the sharing of early warning data to enhance command and control and increase stability in peacetime

AP/Wide World Photos

Chinese Long March rockets on display in Beijing

and crises. The United States and Russia began preliminary high-level discussions in 1992 on possible early warning cooperation for the purpose of establishing global protection against ballistic missiles. At that time, it was becoming clear that Russia would experience a loss of radar coverage as a result of sites located outside the former Soviet territory. These discussions explored ways to fill gaps in the Russian early warning system. It was anticipated that such cooperation could lead to better early warning on the southern periphery against states acquiring WMD and ballistic missiles. However, these discussions were discontinued.

The United States and Russia have agreed to resume high-level discussions on early warning. The prospect exists for mutual benefits from such cooperation. Several approaches could be pursued. One approach may be for the United States to provide Russia with selected technology that facilitates the indigenous rebuilding of its early warning systems. Another approach might be to share early warning data. For the United States, there is likely to be substantial value in having access to Russian information that might provide confirmation of third country launch locations from another azimuth, data about missile launches in Asia, and tracking. A third approach might be to establish a direct link between command centers to resolve ambiguity.

The United States will need to broaden today's discussion to encompass total nuclear capabilities. This must go beyond deployed strategic forces and include active defenses that will enhance stability, permit the United States to meet its global security responsibilities, and defend against the growing missile threat from rogue states. Also, the United States must increasingly engage China in this area. Maintaining extended deterrence will require America to sustain cooperative relationships with nuclear and nonnuclear allies.

Consequences for U.S. Policy

Declaratory Policy

The United States has consistently eschewed an unequivocal policy of "no first use" of nuclear weapons. Under the "Negative Security Assurance" concept, U.S. policy is not to use nuclear weapons unless (1) the state attacking the United States or its allies, or its military forces, is nuclear capable; (2) the state is not a party in good standing under the Nonproliferation Treaty; or (3) the state is engaged in a conflict where it is supported by a nuclear state.

Moreover, U.S. officials on several occasions have made it a point not to exclude nuclear weapons use in retaliation for use of chemical and biological weapons against the United States, its forces, or allies. This does not mean that a nuclear response is the first line of defense against such an attack or that nuclear weapons use is inevitable, even to destroy biological and chemical facilities and stocks. However, U.S. policy seeks to make clear that no state can plan on using chemical or biological weapons against the United States

without taking into account the possibility of a U.S. nuclear response. This helps to deter use in a crisis and plays a role in dissuading states from pursuing new or improved capabilities.

In some cases, ambiguous declaratory policy may be perceived as a lack of U.S. commitment that could be exploited. If opponents are tolerant of cost and risk, greater clarity may be needed for deterrence. However, such declarations can be situation dependent and made privately without compromising a broader policy of calculated ambiguity and flexibility. At the same time, the overall posture of the U.S. must be able to support such a declaratory policy. This includes a defense against chemical and biological weapons. The United States must also be capable of a credible and proportional response, with nuclear weapons if necessary.

Updating Old Strategic Concepts

U.S. nuclear forces are the result of Cold War strategic concepts. These concepts include nuclear deterrence, graduated escalation, and flexible targeting options. They were designed for the U.S.-Soviet rivalry and the NATO-Warsaw Pact confrontation. These concepts remain intact today.

The question is whether they will remain relevant in the face of rogues armed with WMD. Will the concept of second-strike deterrence motivate future rogues in the same way it constrained the Soviets during the Cold War? Will flexible response and gradual escalation be relevant in future regional crises? How will rogues view theater defense against WMD? The answers to these questions may be unclear, but they must be addressed if U.S. nuclear strategy is to continue maturing.

Determining the Future of Missile Defenses

The United States is moving toward a deterrence concept that increasingly emphasizes a defensive component. This was recently reflected in the passage of the National Missile Defense Act of 1999, which makes it U.S. policy to deploy national missile defenses as soon as technologically possible. Funding for this system will be subject to the normal budgetary process. In a separate section, the act also reaffirms U.S. policy on continued negotiated reductions in Russian nuclear forces. Once deployed, these defensive systems will need to be upgraded on a continuing basis and in tandem with strategic offensive modernization.

Current U.S. policy also places high priority on defenses against theater ballistic missiles and cruise missiles. For theater defense, the United States is pursuing a combination of lower-tier and upper-tier systems. It is working with NATO allies in preparation for an era in which ballistic missile defense of Europe could become a requirement.

De-alerting

America will need to maintain ready, responsive, and effective nuclear forces as a deterrent against the spectrum of post-Cold War threats. This means that the United States must continue to maintain nuclear forces on alert for crisis stability and crisis management. The level and nature of alert depend on the circumstances.

Compared to Cold War levels, approximately one-third of the American TRIAD has been taken off alert. The United States has removed all nuclear weapons from surface ships and nonstrategic submarines and taken Minuteman II missiles off alert. The entire Poseidon submarine force was deactivated before its scheduled retirement. All B–1B bombers have been converted to a conventional role. All strategic bombers have been taken off strip alert.

Further reducing U.S. nuclear forces and, presumably, Russian nuclear forces on alert has been proposed as a way to reduce perceived risks of unauthorized or mistaken launch of nuclear weapons. These perceptions arise from the alleged unreliability of Russian nuclear command and control systems and attack warning systems. Conceivably, these defects could contribute to preemptive attack or miscalculation.

One should not minimize the risks of unauthorized or mistaken launch, but these risks need to be weighed against the very substantial liabilities of further de-alerting—that is, taking nuclear forces off alert status and rendering them incapable of timely response.

It is not clear that any practical scheme for de-alerting would contribute to reducing the risk of miscalculation. De-alerting could undermine a central element of deterrence, namely, the ability to retaliate promptly. This could make a first strike more attractive to an aggressor, particularly during a period of tension. De-alerting could adversely affect the safety and security of

China's Strategic Capabilities

ICBMs	Intermediate Range Ballistic Missiles (IRBMs)	Nuclear Capable Bombers (PLA-Air Force)	SSBN (PLA-Navy)
20+	80	120	1@12 Submarine-Launched Ballistic Missiles (SLBMs)

Source: Progressive Policy Institute, Defense Working Paper No. 4, April 1998.

warheads and other nuclear weapons components. For example, storing de-alerted components at sites separate from the missiles could increase their vulnerability to sabotage or theft. Additionally, reassembling such systems increases the possibility of malfunctions or accidents.

De-alerting also introduces formidable problems of intrusive verification. On-site inspections could be required to ensure that de-alerted warheads were not remated with missiles. Other de-alerting measures, such as the removal of launch codes from submarines, are not verifiable. If such codes were removed, submarines would have to reveal themselves in order to receive launch codes, thus negating a deterrent that is survivable.

From a safety, readiness, and command and control perspective, it is illuminating to examine what changed between the demise of the USSR and the Russia of today. More is known about Russia's procedures than the Soviet Union's. Based on increased data sharing, exchange visits, and observations by trained inspectors, the Russians appear to have well-trained personnel and adequate procedures for handling and safeguarding nuclear weapons. In some respects, these tasks have become easier as a result of fewer weapons, fewer locations/launch platforms, and less diversity in personnel handling these weapons since their removal from Belarus, Kazakhstan, and Ukraine. The United States and Russia actively share ideas on weapons safeguards and continue officer exchanges.

From a launch control perspective, the Russian problem is also simplified by fewer units, a more "Russian" force, and a strong senior cadre of knowledgeable personnel (where the United States uses first lieutenants, the Russians use lieutenant colonels or colonels), enhanced electronics for connectivity, and continued investment. Despite the concerns regarding the launch of the Norwegian weather rocket in January 1995 spotted by Russian early-warning radars, the Russian command and control system functioned as expected, and personnel made correct decisions.

However, early warning for Russian forces has substantially changed since the Soviet collapse. In the Soviet era, diverse and sophisticated early-warning facilities were on the periphery of the Soviet Union and overlapped considerably. This system was a robust, closely coupled network, and Soviet leadership was confident that it would receive sufficient warning of a nuclear attack. That situation has changed. Some of these early-warning facilities are now outside Russia. Others are of dubious reliability. Funding for rebuilding the system has not been provided. Concerns regarding Russia's early-warning system appear to be valid. A faulty early-warning system could lead to a misinterpretation that results in a deliberate counterlaunch.

Maintaining Confidence Without Testing

Retaining the safety, reliability, security, and performance of nuclear weapons in the absence of underground nuclear testing is, according to a recent study by the National Defense University and the Lawrence Livermore National Laboratory, the highest risk component of the U.S. strategy for sustaining deterrence. America must maintain a high level of confidence in the nuclear stockpile. U.S. policy requires this confidence to be accomplished without nuclear testing. Surveillance programs that ensure that the stockpile is safe and reliable continue to be necessary. These include techniques for certifying reliability and safety without testing, as well as maintaining a standby testing capability. The fewer numbers and types of nuclear weapons, the greater will be the need for ensuring their reliability and safety. A no-testing environment necessitates a robust stockpile program that will instill confidence in national leadership and respect in potential adversaries.

Because the United States must maintain a nuclear posture for decades, at the very least, the capability to redesign and remanufacture nuclear weapons systems must exist at some time early in the next century. Furthermore, if the current Stockpile Stewardship Program does not develop viable means for certifying current weapons in the stockpile and for evaluating possible new designs in the future, the United States must maintain the option to restore underground

tests in a timely fashion. Obviously, any decision to test nuclear weapons underground would be a momentous political decision, but the policies and programs of today must protect a capability to do so in the future.

Net Assessment

Strategic nuclear forces will remain a mainstay of U.S. defense strategy for the future. While traditional nuclear threats are declining, new threats are taking the form of rogue states armed with weapons of mass destruction. This likely will create new roles for U.S. offensive forces and requirements for deploying theater and national missile defenses. Along with these changes will come a need to review and potentially recast such concepts as nuclear deterrence to ensure that they remain relevant in the future.